Swagelok

PTU Series Transducer Digital Display Indicator

User's Manual

The Swagelok® PTU series digital display indicator is available to mount directly to the Swagelok PTU series transducer to provide local indication of system pressure.

The PTU series digital display is a 4-digit, LED display with user configurable units of psi, bar, kg/cm², KPa, and MPa.

The product is available in front view or top view to conform with the mounting orientation. This digital display provides 0.5 % to +/– 1 digit accuracy, includes two programmable set points (one with Bendix connection), and is available with a variety of electrical connectors and output signals to the match the PTU series transducer. The operation at the PTU series digital display indicator requires connection to the transducer, electrical connection of power supply, and set-up of the unit to correspond to the transducer.

This manual is intended to provide general instruction necessary to install, start-up, and troubleshoot the product.

This manual covers the following topics:

SECTION 1: Safety Advisory

⚠ **Do not connect the digital display indicator to hazardous voltage.**

⚠ **Use qualified personnel to install the digital display indicator.**

Safe Product Use

Follow any enclosed instructions and refer to the product catalog for detailed product information. When using a digital display indicator, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user. **Improper selection or misuse of the product may result in serious personal injury or property damage.**

These instructions are also available in Chinese, French, German, and Japanese. Contact your independent Swagelok sales and service representative.

SECTION 2: Connection to Transducer

Various types of connections are available. Make sure that the indicator connections match the transducer connections and the connection lines of the voltage power supply.

Connection jacks are available for direct attachment to the Bendix, 4 pin MIL plug, or M12 × 1, 4 pin circular connector.

	Connector Pin	2-Wire System, Current Output	3-Wire System, Voltage Output
Circular connector (female) M 12 × 1, 4 pin			
	1	Power supply V dc+, S+	Power supply V dc+
	2	—	—
	3	Power supply 0 V dc, S–	Power supply 0 V dc, S–
	4	—	Signal, S+
Bendix MIL-connector (female) 4 pin			
	A	Power supply V dc+, S+	Power supply V dc+
	B	—	Signal S+
	C	—	—
	D	Power supply 0 V dc, S–	Power supply 0 V dc, S–

SECTION 3: Output Connection Wiring

|	Connector Pin	2-Wire System, Current Output	3-Wire System, Voltage Output
Circular connector M 12 × 1, 5 pin			
	1	Power supply V dc+, S+	Power supply V dc+
	2	Switch out1	Switch out1
	3	Power supply 0 V dc, S–	Power supply 0 V dc, Switch ground, S–
	4	Switch ground (potential-free)	Signal S+
	5	Switch out2	Switch out2
Flying leads			
	red	Power supply V dc+, S+	Power supply V dc+
	black	Power supply 0 V dc, S–	Power supply 0 V dc Switch ground, S–
	yellow	Switch ground (potential-free)	Signal S+
	brown	Switch out1	Switch out1
	orange	Switch out2	Switch out2
Bendix MIL-connector (male) 4 pin			
	A	Power supply V dc+, S+	Power supply V dc+
	B	Switch ground (potential-free)	Signal S+
	C	Switch out1	Switch out1
	D	Power supply 0 V dc, S–	Power supply 0 V dc, Switch ground, S–
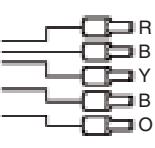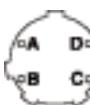
SECTION 4: Setting Up the Digital Display Indicator

Function

The following functions are available:

- Pressure unit selection
- Decimal point position
- Setting lowest display value
- Setting highest display value
- Switching point setting for output 1
- Switching function setting for output 1
- Switching point setting for output 2 (Flying lead and M12 only)
- Switching function setting for output 2 (Flying lead and M12 only)
- Display unit selection
- Zero point correction

Key functions

SET		Set switching points and functions (hold two seconds)

▲ Increase unit

▼ Decrease unit

SET + ▲ Input zero point offset (hold five seconds)

SET + ▼ Configuration (hold five seconds)

4a: Matching the Indicator to the Transmitter
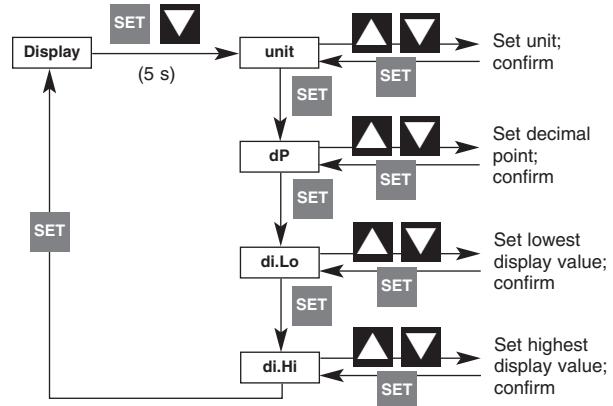
1. Press SET and ▼ simultaneously for five seconds; the display will show "unit."

2. Select the unit using ▲ and ▼ . The selected unit should match the unit of the transducer.

3. Confirm the set value by pressing SET ; "unit" appears again in the display.

4. Press SET briefly; "dP" (decimal point) appears in the display.

5. Select the required position of the decimal point using ▲ and ▼ .

6. Confirm the set value by pressing SET ; "dP" will again appear in the display.

7. Press SET again; "di.Lo" (display low) appears in the display.

8. Set the lowest display value using ▲ and ▼ . This value should match the minimum pressure rating of the transducer.

9. Confirm the set value by pressing SET ; "di.Lo" appears again in the display.

10. Press SET briefly; "di.Hi" (display high) appears in the display.

11. Set the highest display value using ▲ and ▼ . This value should match the maximum pressure rating of the transducer.

12. Confirm the set value by pressing SET ; "di.Hi" appears again in the display.

13. Press SET briefly; the display disappears for a short time and consequently signals that the settings have been taken over in the internal memory. Afterwards the measured value is displayed again.

NOTE: If no key is pressed for ten seconds when setting the instrument, it automatically changes back into the overriding menu level. After 60 seconds, the instrument automatically exits the configuration menu. Changes will not be saved.

4b: Setting Switching Points and Functions
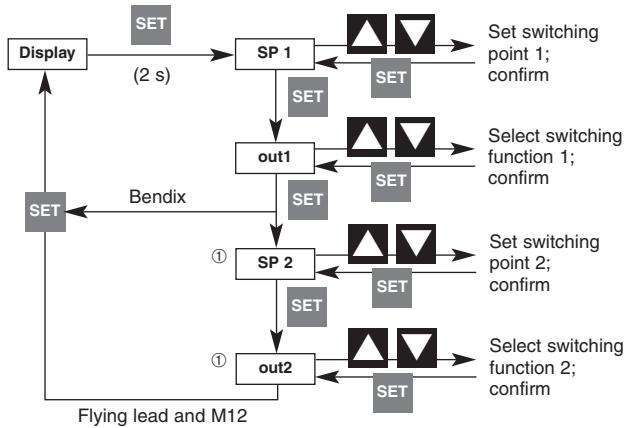
1. Press SET for two seconds; "SP 1" appears in the display.

2. Set the required switching point for switching output 1 using ▲ and ▼ (permissible range: minimum to maximum display value).

   Scrolling function:
   The up and down arrows are equipped with a "scroll function" to enter values. If the key is pressed briefly, the display value will change by one digit. If the key is held down longer (> 1 second), the value changes quickly.

3. Confirm the set value by pressing SET ; "SP 1" will appear again in the display.

4. Press SET again; "out1" will appear in the display.

5. Select the required switching function of the output 1 using ▲ and ▼ .

   Four possibilities are given:

   off: always off   on: always on
   no: make contact   nc: break contact
        (normally open)   (normally closed)

6. Confirm the selection by pressing SET ; "out1" will again appear in the display.

7. Press SET briefly; "SP 2" appears in the display.①

8. Set the required switching point for switching output 2 using ▲ and ▼ (permissible range: minimum to maximum display value).

9. Confirm the set value by pressing SET ; "SP 2" will appear again in the display.

10. Press SET again; "out2" appears in the display.

11. Select the required switching function of output 2 using ▲ and ▼ .

12. Confirm the selection by pressing SET ; "out2" will appear in the display again.

13. Press SET briefly; the display will disappear for a short time and signals that the settings have been taken over in the internal memory. Finally, the measured value will be shown again.

NOTE: If no key is pressed for ten seconds when setting the instrument, it automatically changes back into the overriding menu level. After 60 seconds, the instrument automatically exits the configuration menu. Changes will not be saved.

① Flying lead and M12 only.

4c: Selection of Pressure Unit for Display

1. Select the required unit using ▲ and ▼ .

NOTE: Not all units are available on all digital display indicators.

4d: Zero Point Offset

Offsetting the zero point makes it possible to correct display errors which are the result of sensor tolerances. The value entered here is subtracted from the measured result, i.e. the characteristic curve is offset parallel to the zero point.
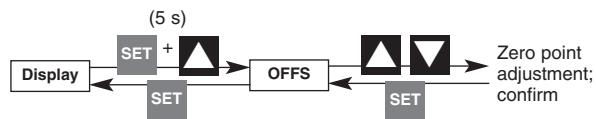
1. Press SET and ▲ for five seconds; "OFFS" (offset) appears in the display.

2. Enter the required zero point offset using ▲ and ▼ (permissible range: + 12.5 % of display span).

3. Confirm the set value with SET ; "OFFS" again appears in the display.

4. Press SET briefly; the measured value is displayed again.

NOTE: If no key is pressed for ten seconds when setting the instrument, it automatically changes back into the overriding menu level. After 60 seconds, the instrument automatically exits the configuration menu. Changes will not be saved.

SECTION 5: Troubleshooting

Error Message	Possible Reason	Remedy
Err. 1: Measuring range exceeded The measuring range of the transducer has been exceeded by greater than 2 % of the measuring range span.	Overpressure	Error resets itself when signal is within range.
	Transducer defective or not suitable	Check the transducer.
	Transducer connection cable is short circuited	Check the transducer connection lines.
Err. 2: Signal below measuring range[1] The measuring range of the transducer falls short of the measuring range span by greater than 2 %.	Input signal too low	Error resets itself when signal is within range.
	Transducer defective or not suitable	Check the transducer.
	Transducer connection cable is short circuited	Check the transducer connection lines.
Err. 3: Display range exceeded The maximum possible display value of 6000 has been exceeded.	The display value cannot be displayed in the selected unit	Error resets itself when the measured value is within the display range.
Err. 4: Measuring range exceeded The minimum possible display value of –999 has not been achieved.	The display value cannot be displayed in the selected unit.	Error resets itself when the measured value is within the display range.

[1] The keys are blocked as long as the error message Err.2 is displayed.

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Caution: Do not mix or interchange parts with those
of other manufacturers.
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